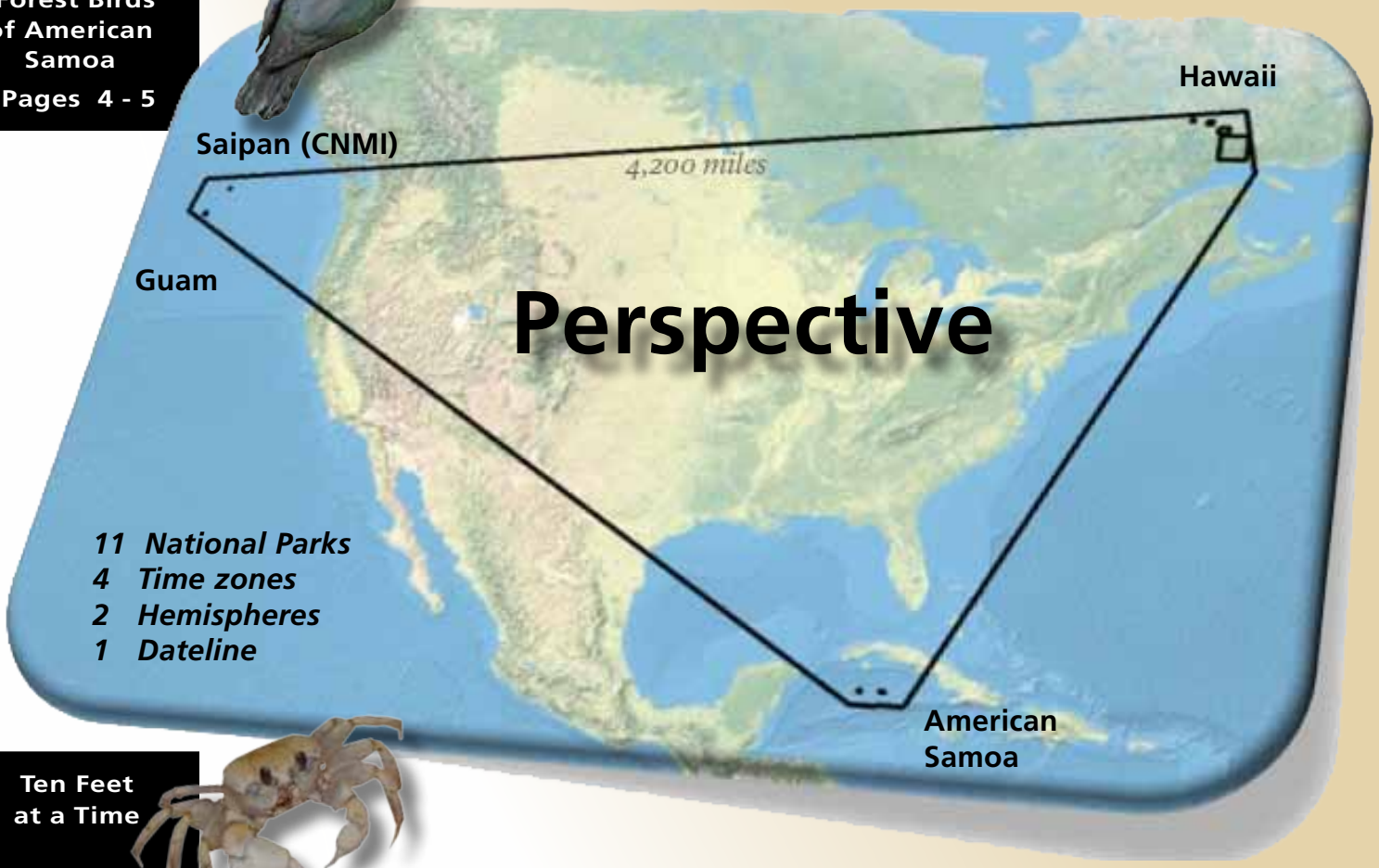
Inventory & Monitoring
Pacific Island Network

National Park Service
U.S. Department of the Interior

Pacific Island Network Quarterly

A little perspective, please

Don't worry, Haleakalā NP is not in Quebec and the NP of American Samoa is not in Cuba.



The Pacific Island Network of national parks (black polygon) is geographically larger than the continental United States. Like this map, we have a lot of ground to cover in this issue. Read about some of the birds, plants, and invertebrates in the southernmost and westernmost parks in the National Park System.

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National Park Service
U.S. Department of the Interior
Pacific Island Network
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The National Park Service (NPS) has implemented natural resource inventory and monitoring on a servicewide basis to ensure all park units possess the resource information needed for effective, science-based management, decision-making, and resource protection.

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NOTE: Unless indicated all photos and articles are NPS.
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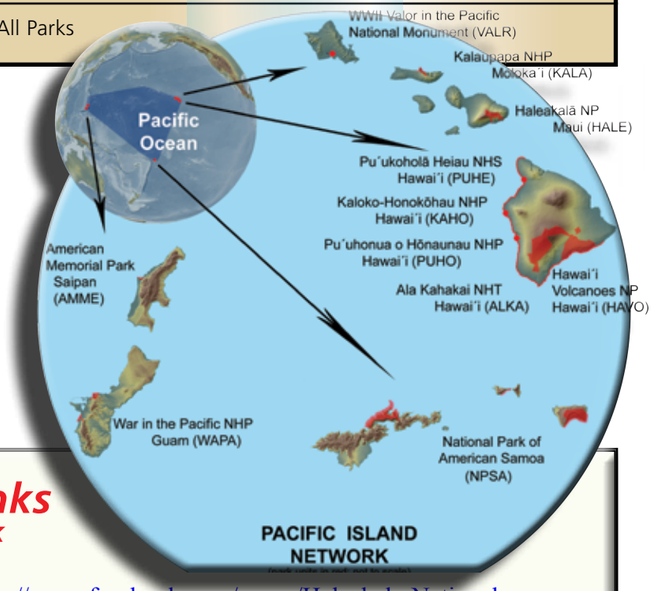
Field Schedule

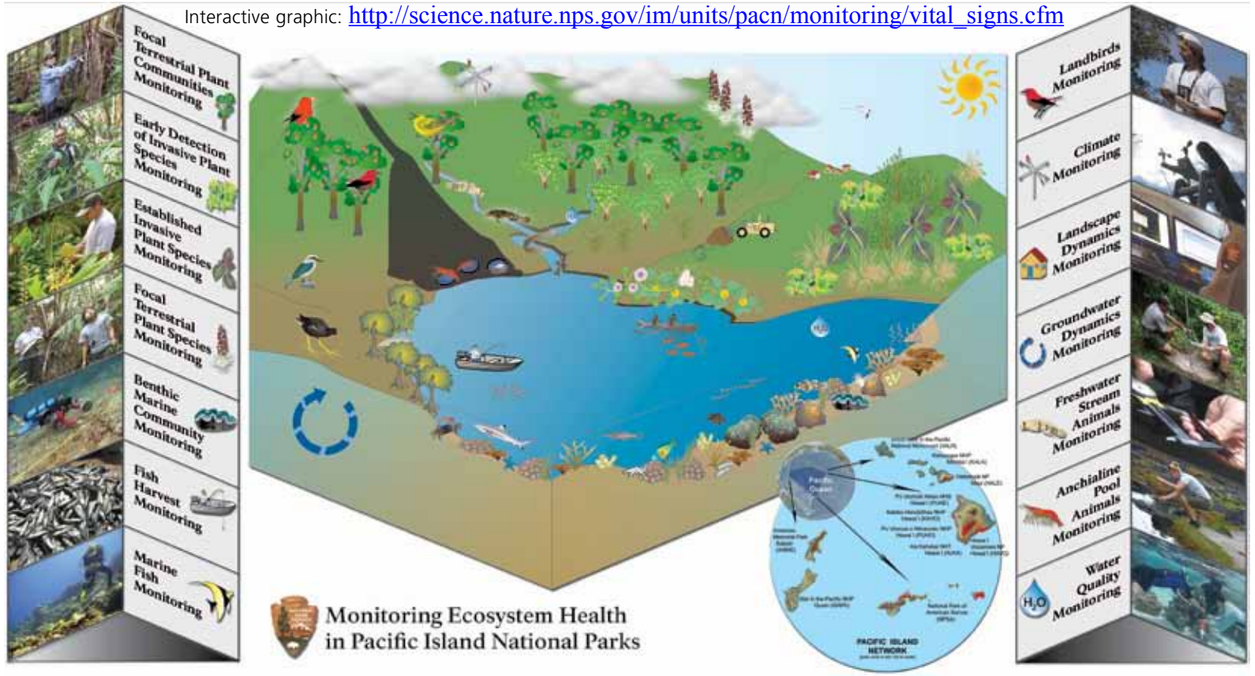
	April	May	June
Landbird monitoring	HALE	HALE	
Invasive plants	HALE	HALE	HALE and KALA
Plant commun.	HALE	HALE	HALE and KALA
Water quality	HALE	West Hawai'i	NPSA
Stream animals	WAPA		
Ground water		KAHO and AMME	
Benthic marine	NPSA and KALA	NPSA	
Marine fish	NPSA	NPSA	
Vegetation mapping	NPSA	NPSA, HAVO, KALA	NPSA
Climate (on-going)	All Parks		



Hot links
Facebook

HALE: http://www.facebook.com/pages/Haleakala-National-Park/348662787511
HAVO: http://www.facebook.com/hawaiivolcanoes
WAPA: http://www.facebook.com/pages/War-in-the-Pacific-National-Historical-Park/155182957883771
PUHE: http://www.facebook.com/pages/Puukohola-Heiau-National-Historic-Site/209070525817386
NPSA: http://www.facebook.com/pages/National-Park-of-American-Samoa/118648148187878

Interactive graphic: http://science.nature.nps.gov/im/units/pacn/monitoring/vital_signs.cfm



Featured Staff

Melissa Simon – *Biotechnician*

Melissa was born and raised in Seattle, Washington. She obtained her B.S. in Evolution and Ecology from the University of Washington in Seattle and her Master's in Evolution, Ecology, and Population Biology from Washington University in Saint Louis. Melissa has spent the last few years conducting research on plant-animal interactions, seed fate, and plant demography in various locations around the US, as well as in Bolivia and Puerto Rico. She is currently working with the I&M Vegetation Team.

In her free time Melissa enjoys spending time outdoors, jammin' on her ukulele, creating stained glass art, and traveling.

Meagan Selvig – *CESU Cooperator*

Raised in Colorado, Meagan first made the voyage across the Pacific in 2004 when she moved to Hilo, HI in pursuit of a degree in conservation biology. Upon graduation, her love of the Islands inspired her to gain professional experience in Hawaii. Then in 2008 she began working for the Forest Service on a fire regime and dry forest restoration project. She now joins the I&M team as an CESU mapping field technician on the vegetation mapping team. She has enjoyed returning to a mountain-like livelihood in Volcano on the Big Island. She's also excited to learn more about PACN parks, and the precious resources they protect.

Justin Mills – *Biotechnician*

Justin grew up in Oregon and earned his bachelor's at University of Oregon in Environmental Science (mostly studying GIS and conservation biology), then worked on coho salmon conservation for six years. Later, his Masters's research in Fisheries Science at Oregon State University focused on landscape patterns of life history in steelhead/rainbow trout. In 2008, he moved to Guam to dive and conduct coral reef ecology research. He started working with NPS in October 2011. Justin splits his work time between I&M and serving as War in the Pacific NHP's aquatic biotechnician and park dive officer.

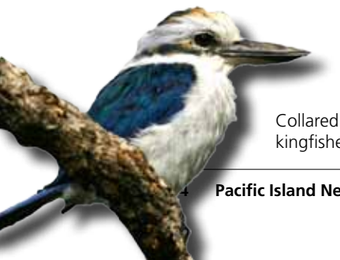
Do You Want to See Polynesian Birds? American Samoa Won't Disappoint.

The National Park of American Samoa (NPSA) contains the only paleotropical rainforest in the U. S. National Park System. The forest's native birds (and fruit bats) are major pollinators and seed dispersers that drive ecological processes throughout the Samoan Archipelago. Their importance to these forests is profound.

Agriculture, hunting, logging, development, and the introduction of numerous alien species have had negative effects on bird populations. The birds have also suffered periodic declines as a result of the high frequency of very destructive hurricanes in the archipelago. Protection of large sections of native rainforest, such as in NPSA, has been a great benefit to Samoa's native birds.

Our landbird monitoring team surveyed NPSA's forests for birds and habitat characteristics from June through August, 2011. The survey area was comprised of the terrestrial portions of the Ta'u and Tutuila Units of the park. Point-transect distance sampling was used to estimate bird abundance.

We detected a total of 2,516 birds and 13 species in the park. All species are either endemic or indigenous to American Samoa. Nearly every species detected was broadly distributed in the predominantly native forests of NPSA. For seven species, a sufficient number of detections were made to allow us to make density estimations for those species (how many birds per hectare). Encouragingly, bird population estimates from our surveys were similar to or higher than previous island-wide surveys on both Tutuila and Ta'u islands.



Collared kingfisher

The wattled honeyeater (*Foulehaio carunculata*) was the most conspicuous, widespread, and abundant species in both units with an estimated population of almost 150,000 birds. A generalist and aggressive forager, this species has taken advantage of NPSA's numerous flowering plants and perhaps forces other birds, such as the cardinal honeyeater (*Myzomela cardinalis*), to forage in areas closer to villages.

In both park units, the Polynesian starling (*Aplonis tabuensis*), Samoan starling (*Aplonis atrifusca*), collared kingfisher (*Halcyon chloris*), Pacific pigeon(*Ducula pacifica*) and purple-capped fruit-dove (*Ptilinopus porphyraceus*) occurred in modest to high densities (see sidebar). The banded rail (*Gallirallus philippensis*) and purple swamphen (*Porphyrio porphyrio*) occurred in low densities (14 and 7 detections, respectively). Both of these species, which travel and forage on the forest floor, may be vulnerable to attacks by cats and dogs.

Unique to the Manu'a Islands (a group of islands that inlcude Ta'u Island), the blue-crowned lorikeet (*Vini australis*) occurred in modest densities, about 9,400, within the boundaries of NPSA on Ta'u. It is also worth noting that only 15 Fiji shrikebills (*Clytorhynchus vitiensis*) were detected on Ta'u. In addition, there were no detections of the spotless crake (*Porzana tabuensis*), perhaps the rarest landbird in American Samoa.

As we surveyed, we were reminded that the archipelago is under constant threat from destructive hurricanes, which have caused significant periodic declines of every landbird species. Hurricane Tusi in 1987, Hurricane Ofa in 1990, and the very severe Hurricane Val in 1991, caused catastrophic losses to human structures, as well as stripped foliage off large areas of native forests. As a result of these storms, there were less than 50 many-colored fruit-doves (*Ptilinopus perousii*) on all of Tutuila Island in 1995 according to the American Samoa Department of Marine and Wildlife Resources (1996). These doves appear to still be struggling. On the other hand, the collared kingfisher, wattled honeyeater, and purple-capped fruit-dove have shown stronger signs of recovery.

13 native species of landbirds

Pacific pigeon

The field team takes a breather after a long morning of bird counts

The wattled honeyeater was the most abundant species detected in the survey. The team estimates nearly 43,000 on Tutuila Island and more than 105,000 individuals on Ta'u. (photo by Emily Weiser).

In our surveys, the many-colored fruit-dove was detected in very low numbers; however, this species is known to be patchily distributed. Opportunities to observe and collect distribution information on this species depends on the availability of fruits, especially *Ficus* species. In addition, on Ta'u the dove may have been negatively impacted by the recent Hurricanes Heta in 2004 and Olaf in 2005. Densities of the majority of landbirds detected on Ta'u were lower than estimates from Tutuila, which was not as severely impacted by those hurricanes. In contrast, populations of purple-capped fruit doves appear stable in both units which may be attributed to the species' generalist diet.

We expect the distribution of landbirds in NPSA to fluctuate over time, particularly in areas where birds frequent because of foraging opportunities. Birds tend to follow their food sources, and naturally, the availability of fruit and nectar is dependent on plant distributions and weather events.The bird sampling stations used in the 2011 survey were broadly distributed throughout NPSA, so we consider our estimates to be a good representation of species abundance.

This survey also provides solid baseline information on landbird distribution and density in the park. The survey will be repeated every five years to detect trends for these bird populations. Long-term monitoring of the landbirds and associated habitats of NPSA will help managers ensure that the unique and colorful birds of American Samoa will continue to paint these tropical landscapes.

The National Park of American Samoa offers excellent opportunities to observe Polynesian birds for scientists and visitors alike.

–S. Judge, Wildlife biologist, CESU

Cardinal honeyeater

NPSA Landbird Survey 2011

2,516 bird detections

Banded rail
13 detected

Purple swamphen
7 detected

Many-colored fruit-dove
16 detected

Purple-capped fruit-dove
338 detected

Blue-crowned lorikeet
101 detected

White-rumped swiftlet
87 detected

Collared kingfisher
73 detected

Fiji shrikebill
15 detected

Samoan starling
354 detected

Polynesian starling
187 detected

Cardinal honeyeater
17 detected

Wattled honeyeater
1111 detected

Pacific pigeon
197 detected

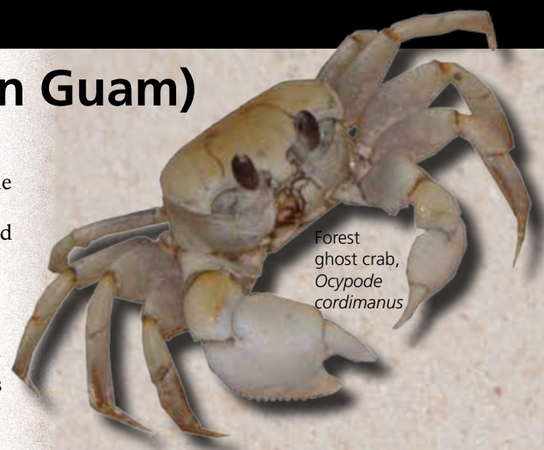
Ten Feet at a Time (Decapods on Guam)

D. Christopher Rogers from the Kansas Biological Survey, University of Kansas quite literally searched ten feet at a time as he captured and released decapods (shrimp and crabs) in the streams of Guam. Christopher was tasked with assembling a field guide to the local freshwater and terrestrial decapods (literally meaning *ten feet*) for the National Park Service.

After scouring historical accounts of the freshwater shrimp and crabs, and terrestrial crabs in the Northern Marianas Islands, he came to the conclusion that 77 species are likely to exist on Guam. In early 2011, he set off to verify those accounts and confirm some suspicions that there may be other species lurking under the muddy waters and in the dense jungle vegetation. He slipped on his rubber boots, grabbed some special nets, and packed a few other essentials to aid him on his quest.

Identifying shrimp and crabs can be a bewildering task. There are a great variety of structures and appendages all with their own specific form and function. This did not make Christopher's job easy.

After one week of intensive sloshing in Guam's streams, he identified 40 species. While searching both day and night Christopher found 9 species of freshwater shrimp, 7 species of hermit crabs, and 46 species of true crabs. A pretty good turnout for such a short period of field work. To his surprise, nine of those species were either previously unknown on Guam or have never been described before (a.k.a. possibly new to science).



Forest ghost crab, *Ocypode cordimanus*

Left: Christopher briefly pauses in the Toguan River, armed with only a net and a rich knowledge of decapod invertebrates.

Many decapods can be found in Guam's vast limestone caves (left bottom). This small *Orcovitta molita (below) spends its life below the ground.*

Above photo by: J. Thorp All other photos by: D.C. Rogers and NPS

Highlights

What was found

A new species of *Alpheid* shrimp in a freshwater cave. This new species is in the genus *Metabetaeus*. All other *Metabetaeus* species are marine (or brackish), and do not live in caves.

A new species of *Palaemonid* shrimp in the genus *Macrobrachium*.

A first record for the crab *Cyclograpsus longipes* from the Marianas Islands and a new, undescribed species of *Cyclograpsus.*

A new species of crab in the genus *Grapsus* in an upper estuary.

A possible new species of the crab genus *Ptychognathus*, but this still needs to be confirmed.

A new, undescribed species of *Atyid* shrimp in another cave. We also we found a species of *Atyid* shrimp not previously reported from the Marianas Islands.

***Penaeid* shrimp were found in some estuaries.** These are invasive species introduced for fisheries. They are very popular for market, and have been introduced extensively in the Philippines.

–D.C. Rogers, Kansas Biological Survey, University of Kansas
–C. Nash, NPS

Side Note

Crabs and other decapods play an important role in Chamorro culture.

Christopher holding a crab species called *Cardisoma carinifex*, locally known as pång'lao.

Later, Christopher discovered this same species being served at a village restaurant.

How did we find the animals?

"I used nets and traps or just captured the animals by hand. The really important message here, is that all these new records and species, plus over half of the known species, were found in just one week. What this basically means is that we have barely scratched the surface of the potential biodiversity on this island. There may be several more new species to find. For example, I have some information that there is an undescribed species of crab living in the tops of the Pandanus trees along one river."

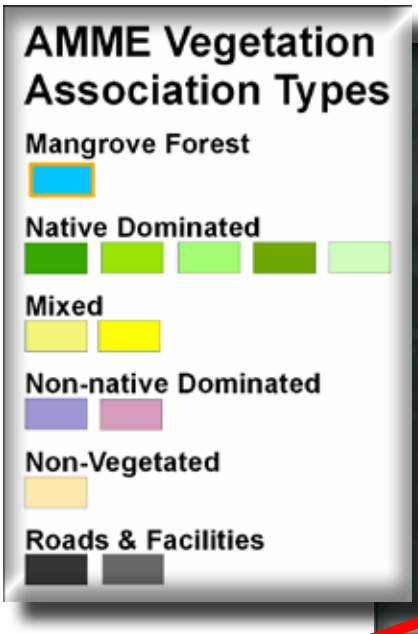
–D.Christopher Rogers

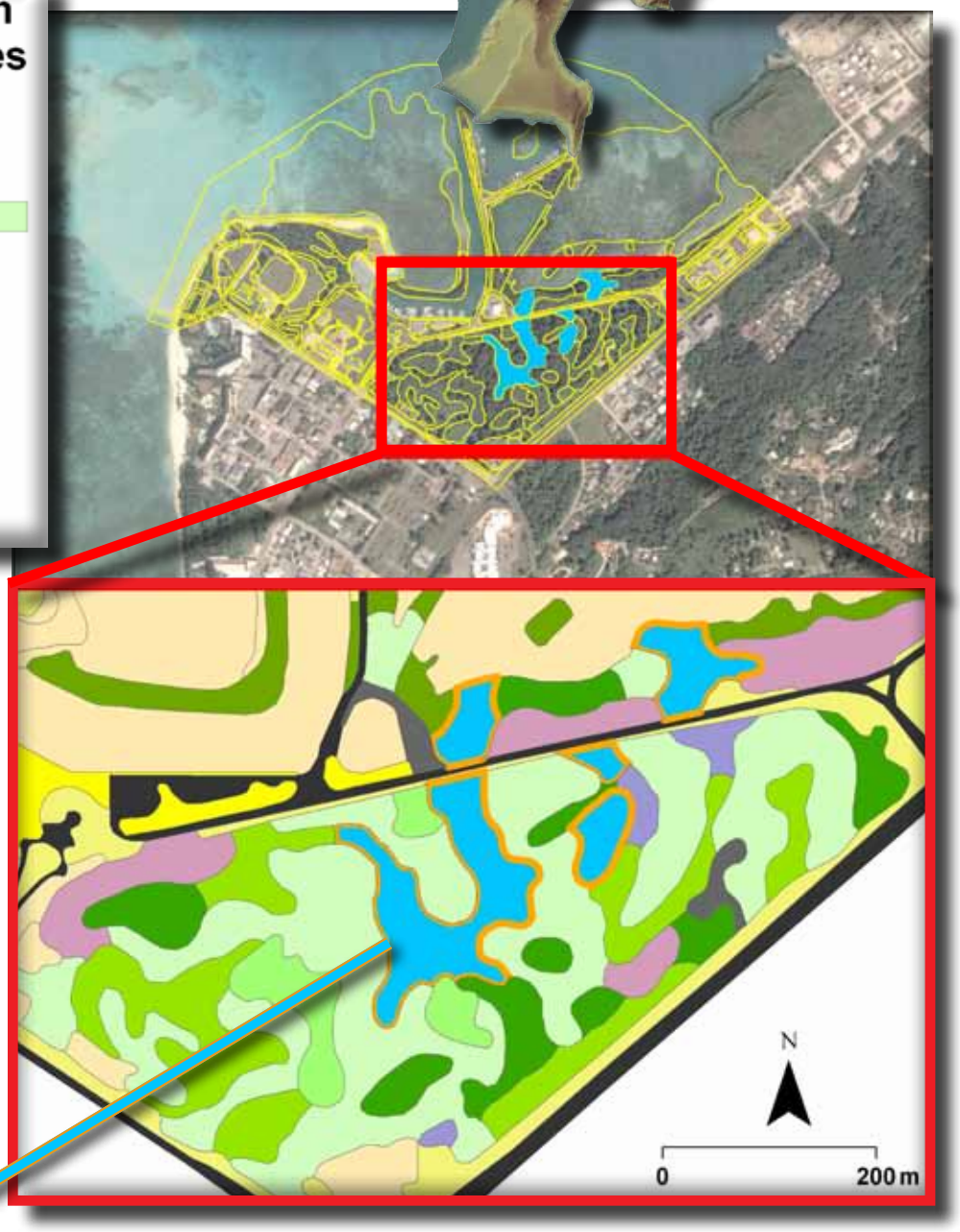
Where the Wild Plants Are (AMME)

Since 2008, the Inventory and Monitoring Program has collaborated with mapping experts, vegetation ecologists, and park staff to create vegetation maps; one of the baseline inventories being completed for all parks. These vegetation community maps are intended to assist managers with all aspects of vegetation management including the important role of vegetation as habitat.

American Memorial Park (red/yellow) is on the island of Saipan in the Commonwealth of the Northern Mariana Islands.

American Memorial Park (AMME) includes 30 hectares of coastal lowlands on the western shores of Saipan. It has seen extensive degradation, partly as a result of the World War II Pacific Theater campaigns.





Five of the ten vegetation associations described within the park are still dominated by native species despite the abundance of invasive plant species across the island. Importantly, this includes one of the last remaining mangle / langayao (*Bruguiera gymnorrhiza / Acrostichum aureum*) forests on Saipan. These special mangroves are surrounded by a mixture of native and invasive plant communities.

Mangle / langayao forests provide essential habitat for native crabs and birds, and protect coastal areas from inundating surf during tropical storms.

This baseline vegetation map provides a valuable tool to detect future vegetation community changes with the growing threats of invasive species and sea level rise.

–M. Selvig, Vegetation Mapping Field Technician, CESU
–C. Yanger, Biological Technician, NPS
–A. Ainsworth, Botanist, NPS

Coming Soon- AMME final vegetation maps !